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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/715,456	11/19/2003	Takashi Okuda	009683-486	3920

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EXAMINER

NGUYEN, KHAI M

ART UNIT	PAPER NUMBER
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2819

DATE MAILED: 03/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/715,456

Applicant(s)

OKUDA ET AL.

Examiner

Khai M. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 March 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 8-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8-11 is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☒ Claim(s) 6 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1- 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Karema et al. (US 5,061,928) (hereinafter, **Karema**).

Regarding claim 1, Karema discloses a sigma-delta modulator apparatus (Fig. 1), comprising: component separating unit (block A) separating a signal component (D1) and an error component (the quantization error signal -Q1) of an input signal (x) (wherein the signal 'x' is an analog input or a digital input – see: column 4, line 32 and column 5, lines 47-65) from each other; a single-stage delta-sigma modulator (block B – it is an nth delta-sigma modulator, wherein n of block B is 2) modulating the signal error component (-Q1) separated by the component separating unit (see the abstract and column 4, lines 47-51); and an output operating unit (comprising blocks 13-16, and 21) operating the signal component separated by the component separating unit and the error component modulated by the sigma-delta modulator.

Regarding claim 2, Karema discloses the component separating unit of claim 1 including: a first quantizer/comparator (6) for quantizing, at least in part, the digital input

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signal; and an adder (1 or 7) for adding the digital input signal (x) to the signal component provided from the first quantizer/comparator (6) via the feedback loop.

Regarding claim 3, Karema et al. discloses the delta-modulator (block B) of claim 2 including: a plurality of integrating/filter means (1, 4 – column 3, lines 43-45); a second quantizer/comparator (6) for quantizing an output of the integrator of the final stage (4); and a delay element (8,9) for delaying an output of the second quantizer to perform negative feedback by sending the delayed output to plurality of integrators (Fig. 1).

Regarding claim 4, Karema teaches block B comprising a plurality of single-stage delta sigma modulators cascaded (lines 1-5 of the abstract), wherein each (of block B/C – the third/fourth stage) includes a plurality of integrators (2, 4), second quantizer (6) quantizing an output of the integrator in the final stage, and a delay element (8,9) delaying an output of the second quantizer, and performing negative feedback by sending the delayed output to the plurality of integrators (Fig. 2).

Regarding claim 5, Karema's apparatus which includes an attenuator means (12, Fig. 1) having a coefficient (or scaling factor) smaller than one (col. 4, lines 45-46).

Allowable Subject Matter

3. Claims 8-12 are allowed.
4. Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

5. Applicant's arguments filed 3/7/2005 have been fully considered but they are not persuasive because the single-stage delta sigma modulator (43) of claim 1 as defined by the applicants is not thing more than an nth (n may be an integer number) delta sigma modulator including integrators, adders, a quantizer, and a delay element (see page 6, line 14 and Fig. 5). As pointed out in the current rejection, the applied reference discloses, including among other limitations/features, the modulating block B is a single-stage delta sigma modulator configured to modulate an error signal (-Q1) provided from a modulating block A of Fig. 1, wherein the single-stage delta sigma modulator (block B) is a nth delta sigma modulator ($n = 2$). For this and above reasons, claims 1-5 are rejected.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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Contact Information

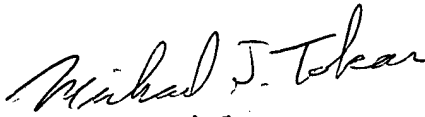
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khai M. Nguyen whose telephone number is 571-272-1809. The examiner can normally be reached on 8:00 to 4:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael J. Tokar can be reached on 571-272-1812. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KN

March 15, 2005


Michael Tokar
Supervisory Patent Examiner
Technology Center 2800